POTHOLES

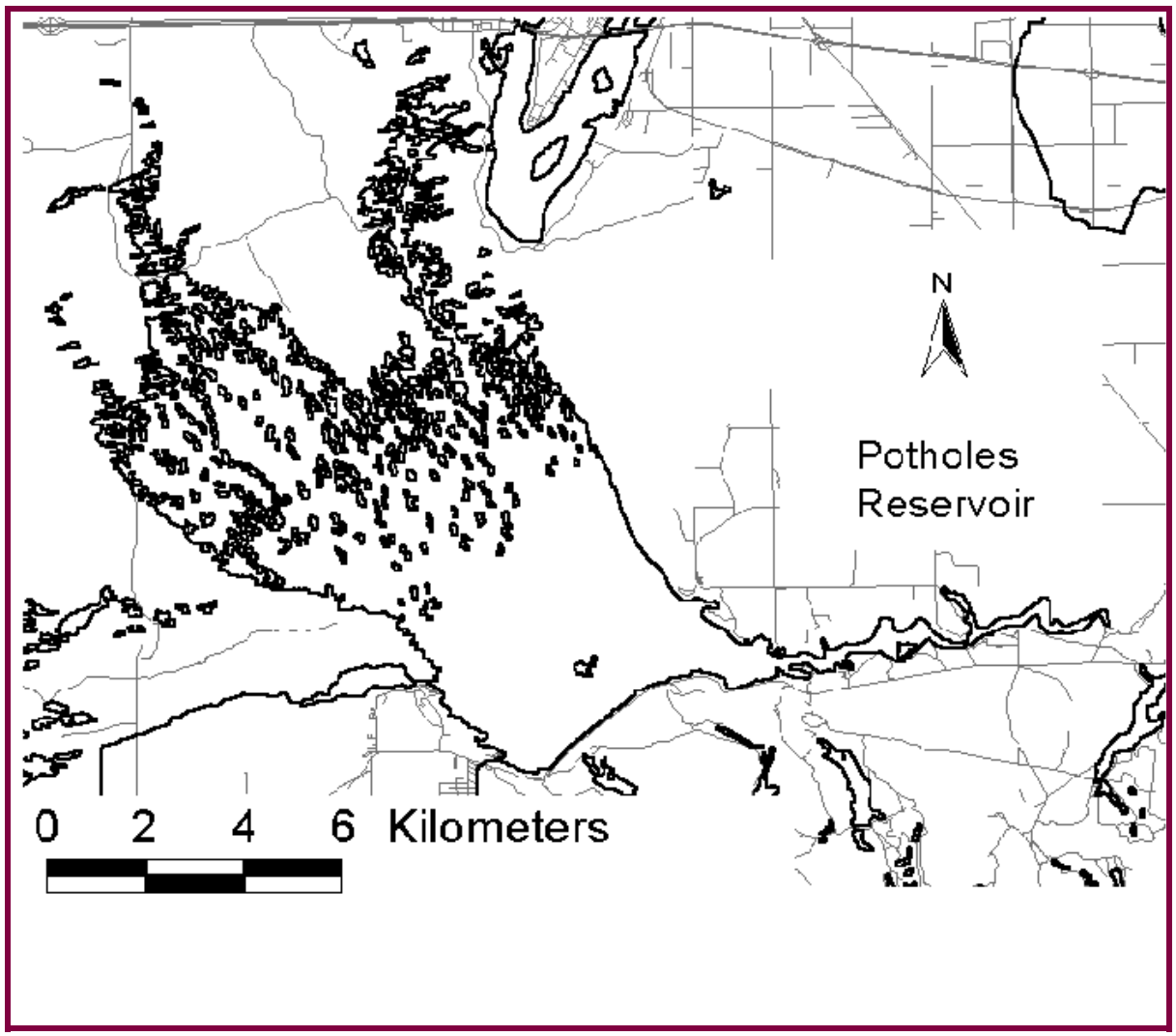
GRANT County

Lake ID: *POTGR1*

Ecoregion: 7

Potholes Reservoir is approximately 5 miles south of the City of Moses Lake and provides a large recreational opportunity for water enthusiasts. It receives water from Moses Lake and irrigation canals and provides water to the Columbia National Wildlife Refuge and the Seep Lakes Wildlife Area as well as many irrigation canals.

Area (acres)	*Maximum Depth (ft)*	*Mean Depth (ft)*	*Drainage (sq mi)*	
28000	142	18		
Volume (ac-ft)	***Shoreline (miles)***	***Altitude (ft abv msl)***	***Latitude***	***Longitude***
500000		1046	46 58 58.	119 15 49.



Station Information

POTGR1

Primary Station	Station # 1	latitude: 46 59 40.0	longitude: 119 19 53.0
	Description:	Approx due east out from State Park launch, half-way to island.	
Secondary Station	Station # 2	latitude: 46 59 30.0	longitude: 119 20 30.0
	Description:	From primary station, go parallel to shore about half-way to north-end islands.	

Trophic State Assessment for 1999

POTHOLES

Analyst: Sarah O'Neal

TSI_Secchi: [a]	45	N
TSI_Phos:	54	
TSI_Chl:	64	
Narrative TSI: [b]	E	

Potholes is an enormous waterbody which receives water from extremely eutrophic Moses Lake as well as a number of return waters from various irrigation wasteways. Consequently, high nutrient levels in the reservoir were not surprising. Some internal nutrient loading occurred in the lake, as indicated by elevated hypolimnetic phosphorus concentrations. Anoxia in the lake bottom likely caused the nutrient loading, particularly during late summer. High nutrient levels generated dense algal blooms in the reservoir. This reduced water clarity, especially toward the end of the summer. However, plant growth was not dense. Plants occurred generally only in patches in protected areas. Large water fluctuations likely prevented plants from establishing. Water level fluctuations and an unprotected, largely unvegetated shoreline combined with heavy boat traffic and high winds likely generated high turbidity in the lake.

Questionnaires were not distributed for Potholes this year (see the 1998 LWQAP report). The reservoir is quite popular for water-skiing, jetskiing, swimming, and especially fishing. WDFW stocked the lake with 120,000 rainbow trout annually, which were reared in net pens from October through early Spring when they were released. The trout, in addition to walleye, and largemouth bass were the most popular fish with anglers. Other warmwater fish species in the lake included yellow perch, bluegill, and crappie in addition to smallmouth bass, brown bullhead, carp, and lake whitefish to a lesser extent. The reservoir also served as habitat to an abundance of overwintering waterfowl.

The primary purpose for monitoring Potholes was to support WDFW fisheries work. The system is large and complicated, and our simple sampling design is inadequate to precisely identify a protective nutrient criterion for the lake. Last year we recommended a tentative total phosphorus criterion of 44.0 ug/L. Mean epilimnetic phosphorus concentrations did not exceed that criterion in 1999.

Mean Secchi = 2.7m (N); Mean TP = 31.6 ug/L; Mean Chl = 30.0 ug/L

[a] TSI Qualifiers: B or W-Secchi Disk hit bottow or entered weeds; J-Estimate; N-Fewer than the required number of samples

[b] E=eutrophic, ME=mesoeutrophic, M=mesotrophic, OM=oligomesotrophic, O=oligotrophic

Chemistry Data

POTHOLES

Date	Time	Strata	Tot P (ug/L	Tot N (mg/L)	TN:TP	Chloro-phyll (ug/L)	Fecal Col. Bacteria (#/100mL)	Hardness (mg/L)	Calcium (ug/L)	Turbidity (NTU)
Station 1										
6/13/1999	1130	E	17.5	.886	51	4.6		141	29600	1.2
		H	88.4	1.3	15					
7/11/1999	1300	E	32.5	1.21	37	65.4				9.7
		H	25.8	1.07	41					
8/8/1999	1145	E	28.8	.854	30	24.5				6.7 J
		H	51.6	1.17	23					
9/12/1999	1300	E	44.8	1.19	27	35.5				3.5
		H	71.5	1.55 J	22					
Station 2										
6/13/1999	1330	E	18.9	.924	49	4.6				
7/11/1999	1430	E	28.8	.856	30	32.1				
8/8/1999	1250	E	32.1	.885	28	32.1				5.8 J
9/12/1999	1345	E	44.3	1.09	25	36				

Strata: L=lake surface, E=epilimnion, H=hypolimnion; Qualifier: J=Estimate, U=Less than, G=Greater than.

Zooplankton Report

POTGR1

Date 6/13/1999 Station: 1
Sample ID 66

Number of organisms measured: #Delet

Group	Percent
Cladocera	#Deleted
Copepod	#Deleted
Other	#Deleted

Group	Percent
Small < 1mm	#Deleted
Large >= 1mm	#Deleted
Ratio of large to Smal	#Num!
Average size (mm):	0.68

Date 6/13/1999 Station: 2
Sample ID 84

Approximately 0.25 mLs counted. Sample full of rotifers.

Number of organisms measured: #Delet

Group	Percent	Group	Percent
Cladocera	#Deleted	Small < 1mm	#Deleted
Copepod	#Deleted	Large >= 1mm	#Deleted
Other	#Deleted	Ratio of large to Smal	#Num!
		Average size (mm):	0.82

Date 8/8/1999 Station: 1 Sample ID 59

Extremely algae-"fied." ID difficult.

Number of organisms measured: #Delet

Group	Percent	Group	Percent
Cladocera	#Deleted	Small < 1mm	#Deleted
Copepod	#Deleted	Large >= 1mm	#Deleted
Other	#Deleted	Ratio of large to Smal	#Num!
		Average size (mm):	0.65

Date 8/8/1999 Station: 2 Sample ID 43

Lots of algae--diffficult to ID.

Number of organisms measured: #Delet

Group	Percent	Group	Percent
Cladocera	#Deleted	Small < 1mm	#Deleted
Copepod	#Deleted	Large >= 1mm	#Deleted
Other	#Deleted	Ratio of large to Smal	#Num!
		Average size (mm):	0.67

Date 8/8/1999 Station: 2 Sample ID 60

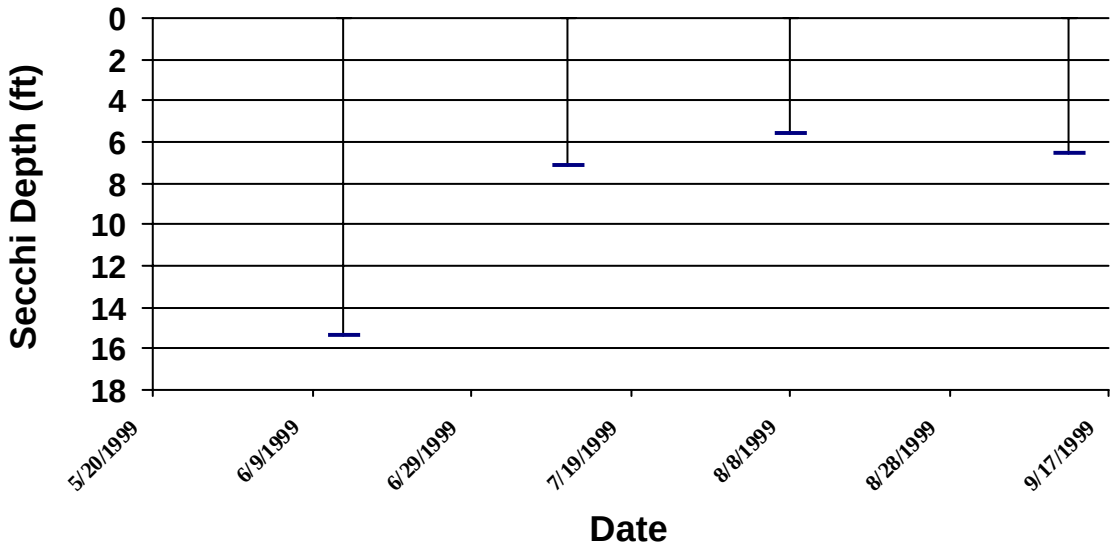
Extremely algae-"fied." ID difficult, had to guess on length a lot. Site 2 duplicate.

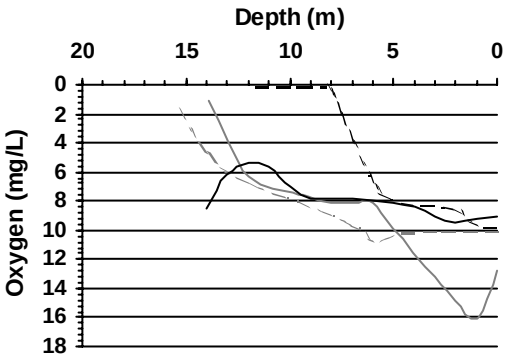
Number of organisms measured: #Delet

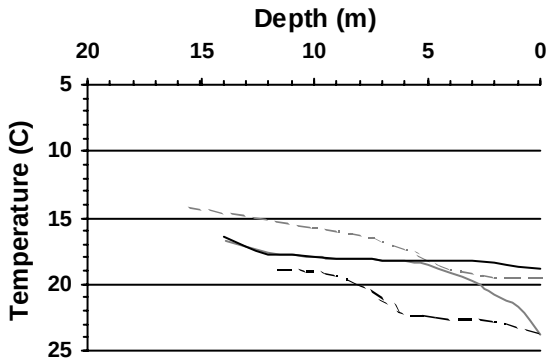
Group	Percent	Group	Percent
Cladocera	#Deleted	Small < 1mm	#Deleted
Copepod	#Deleted	Large >= 1mm	#Deleted
Other	#Deleted	Ratio of large to Smal	#Num!
		Average size (mm):	0.78

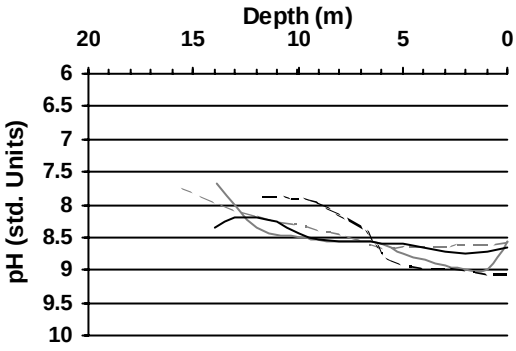
Secchi Depth and Profile Graphics

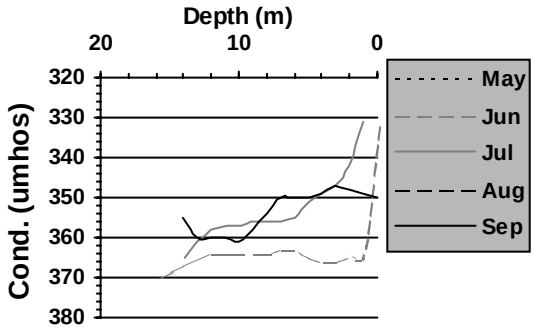
Station: 1 POTGR1











Secchi Data and Field Observations

POTHOLES

Date	Time	Temp-erature (F)	Secchi (ft)	Color (1-greens, 11-browns	Bright-ness (pct)	Wind (1-none, 5-gusty)	Rainfall (0-none, 5-heavy)	Aesthetics (1-bad, 5-good)	Swimming (1-poor, 5-good)	Geese (#)	Waterfowl (besides geese #)	Boats-Fishing (#)	Boats-Skiing (#)
Station 1													
6/13/1999			15.4		20	3	1	4	4	0	6	5	0
	Sampler: HALLOCK			Remarks: The state park is very busy. Water level is high (just above the 9th hold-down on center rail at the SP launch. Bottom at 15.4 M. No clear thermocline, but DO drops at 14M.									
7/11/1999			7.2		0	2	1	3	2	0	12	20	15
	Sampler: HALLOCK			Remarks: Very crowded. Bottom at 13.8M. Kids swimming at SP beach.									
8/8/1999			5.6	2	0	2	1	2	2	0	12	18	6
	Sampler: HALLOCK			Remarks: Bottom at 11.8M. Water level between 23rd and 24th clamp at rail at SP access.									
9/12/1999			6.6	6	0	2	1	2	1	0	60	30	5
	Sampler: HALLOCK			Remarks: Bottom at 13.9M									
Station 2													
6/13/1999			14.1		15	2	1						
	Sampler: HALLOCK			Remarks: Bottom at 13.4 M. Site 2 is toward the islands and at the corner of an equilateral triangle with the state park and site 1 as the other two corners.									
7/11/1999			7.9	2	0	2	1						
	Sampler: HALLOCK			Remarks: Bottom at 8.0M. 20cm dia clumps of senescing blue-green algae. Dissolved oxygen measurement qualified as an estimate due to calibration failing QA/QC requirements.									
8/8/1999			5.2	2	0	2	1						
	Sampler: HALLOCK			Remarks:									
9/12/1999			5.9	6	0	2	1						
	Sampler: HALLOCK			Remarks:									